1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Applicant is respectfully requested to provide a location within the disclosure to support any further amendments to the claims due to when filing an amendment an applicant should show support in the original disclosure for new or amended claims. See MPEP § 714.02 and § 2163.06 ("Applicant should specifically point out the support for any amendments made to the disclosure.").

Continued Examination Under 37 CFR 1.114

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11 February 2008 has been entered.

Response to Arguments

4. With respect to applicant's argument's in regards to the objection of the Oath, the examiner respectfully withdraws the objection based on the "Duty of Disclosure Language Set Forth in Oaths or Declarations Filed in Nonprovisional Patent Applications" (signed 22 January 2008) in the "Official Gazette" of the USPTO published 12 February 2008.

5. Applicant's arguments filed 11 February 2008 have been fully considered but they are not persuasive as set forth below:

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 6, 12, 16 and 25 rejected under 35 U.S.C. 102(b) as being anticipated by Kondou et al. (U.S. Patent No. 5,361,188).

Kondou et al. disclose a combination, bum-in oven (compact high performance computer 15 that may be used for testing components) having a heat control system (column 2, lines 37-59) comprising an oven chamber/compartment (see Figure 1, 2, 23), a plurality of generally parallel, spaced apart bum-in boards (plurality of substrates 1; see Figure 1), each supporting a plurality of devices under test (IC chips 2), each device under test being supported in a support (see Figures 3-5) having a heat exchanger portion (pin fins 10/heat radiation fin 27), a separate wall (dummy substrate 14; column 11, lines 3-19; see Figure 23) spaced from each burn-in board (plurality of substrates 1; see Figures 1, 23) to form an airflow duct overlying each bum-in board (column 11, lines 3-19), each wall being imperforate except for a plurality of fan openings therethrough, one fan opening overlying each device under test on an associated bum-in board (column 11, lines 3-19; see Figure 23), a plurality of separate controllable fans (small

fans 3) supported on each wall, each fan controlling flow through one fan opening through the associated wall, each fan (small fan 3) being on a side of the associated wall opposite from the heat exchanger (pin fins 10/heat radiation fin 27) portions and when powered providing a controllable flow of air through the associated fan opening in the associated wall (dummy substrate 14) forming the associated air flow duct onto the associated heat exchanger portion of the support supporting the device under test (IC chips 2) (see Figure 23), and into a space adjacent the supports (Figures 3-5) and the devices under test (IC chips 2) (see combination Figures 3-5, 23); and a source of cooling air open to the duct (see Figure 2), and an exhaust (see Figure 2) for the cooling air from the oven chamber whereby a flow of cooling air is passed through the duct across the separate fans, and a part of the air flow is directed through the associated fan opening in the wall forming the air flow duct toward the associated heat exchanger portion when a respective fan is operated, and air flow in the respective duct which is not directed by a fan through a fan opening flowing to the exhaust from the oven chamber.

With respect to the limitations of claim 12, Kondou et al. further disclose a plurality of airflow ducts, one between each fan tray ((dummy substrate 14), and an overlying bum-in board (substrate 1), the airflow ducts extending laterally to provide airflow to the fan trays (see Figure 23), a plurality of fan outlet openings (orifices to accommodate small fan 3; column 111, lines 3-19; see Figure 23) in each fan tray (dummy substrate 14), the fan trays being otherwise imperforate (see Figure 23), one fan outlet opening overlying each device under test (IC chips 2) associated with one

respective underlying burn-in board (see Figure 23), a plurality of controllable fans (small fans 3) mounted on each fan tray (dummy substrate 14) (see Figure 23), one controllable fan (small fan 3) being mounted at each fan outlet opening, a source of cooling fluid flow on one lateral side of the airflow ducts (see Figure 2), a controlled size inlet opening from the cooling airflow source to each of the ducts (see Figure 1, 2, 23), an exhaust opening (see Figure 1, 2, 23) from the ducts to provide a flow of air through the respective duct, a separate temperature sensor (100) for each device under test to sense the temperature of the respective device under test, and a controller (small fan 3 may be controlled by the temperature sensor 100 implies a controller) for selectively controlling the operation of each controllable fan as a function of a temperature signal provided from the temperature sensor for the respective device under test underlying the respective controllable fan to operate the respective controllable fan to direct air from the respective duct onto the device under test underlying such controllable fan (column 2, lines 3-16, 37-29; column 3, lines 33-39; column 6, lines 19-56).

With respect to the limitation of "a burn-in oven", Kondou et al. disclose a high performance computer (15) having a chamber/compartment (see Figure 1) having a plurality of substrates (1) with IC chips (2) thereon. It is known in the art that PC stations are used for burn-in/cyclical operational testing of devices under test. Kondou et al. further disclose the high performance computer (15) having all the recited limitations as noted above. Therefore since the chassis of high performance computer (15), as disclosed in Figure 1, has all the structure and functionality and is used for testing/burin-

in of electrical devices, Kondou et al. fully meets a "burn-in oven" given its broadest reasonable interpretation.

With respect to the limitations of claim 1 and the device under test being associated with a heat exchanger, Kondou et al. discloses an embodiment wherein the device under test can take the form of a more complicated device (LSI package 7) requiring a heat exchanger (heat radiation fin 27) as part of the support with the cooling air flow coming from the opposite side thereof to provide a further cooling effect to the device under test (LSI package 7), thereby further improving the cooling performance as well as increasing the reliability (column 9, lines 10-29).

With respect to the limitations of claim 6, Kondou et al. disclose the source of cooling air (see Figure 2) comprises a plenum chamber at the one end of the oven chamber (the left side of Figure 2), a second fan (fan 13 on right side of Figure 2) providing an airflow to the plenum chamber, and the second fan receiving a return airflow from the oven chamber.

With respect to the limitations of claim 16, Kondou et al. disclose a blower (fan 13) for providing the flow of cooling air to inlet ends of the ducts, and a flow passageway carrying air from the blower to the inlet ends to provide cooling air to each of the ducts (column 11, lines 3-19; see Figures 1, 2, 23).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 2, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondou et al. (U.S. Patent No. 5,361,188) in view of Hamilton et al. (U.S. Patent No. 5,582,235).

Kondou et al. disclose all of the limitations of the claimed invention, as previously set forth, except for a damper movable to adjust a size of a damper opening for the

airflow, and a controller for controlling the opening of the damper in response to a selected parameter.

However, a damper movable to adjust a size of a damper opening for the airflow, and a controller for controlling the opening of the damper in response to a selected parameter, as described by Hamilton et al., is known in the art. Hamilton et al. teach a gas flow controller (35) controlling nozzle controllers (110a-110n), via signals provided by leads (95a-95n), nozzle controllers (110a-110n) to regulate the volume of gas output of nozzle valve/damper (100a-100n) impinging on electronic component (25a-25n) (column 2, lines 42-57), thereby inherently providing a further means to regulate the temperature of the electronic component (column 1, line 58 – column 2, line 2). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the cooling assembly of Kondou et al. with the controlling of a movable valve of Hamilton et al. to regulate the volume of gas output impinging on electronic component, thereby inherently providing a further means to regulate the temperature of the electronic component.

With respect to the limitations of claim 7, Kondou et al. disclose a plurality of oven chambers (see Figure 2, 10, 23) with each chamber having at least one burn-in board (plurality of substrates 1) supporting devices under test (IC chips 2). Kondou et al. further disclose, as noted above.

12. Claims 9, 11, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondou et al. (U.S. Patent No. 5,361,188) in view of Fredeman et al. (U.S. Patent No. 6,504,392).

Kondou et al. disclose all of the limitations of the claimed invention, as previously set forth, except for the oven chamber has a heat exchanger for cooling air passing therethrough, the cooling air passing through the heat exchanger before entering the space; and individual heaters for heating each of the devices under test, the controller receiving a-the temperature signal from the respective device under test, and controlling its associated controllable fan and heater to maintain the temperature sensed at a desired range.

However, a burn-in oven comprising a heat exchanger to cool air into the oven as well as individual heaters and fans associated with each device under test being controlled simultaneously with a controller is known in the art.

Fredeman et al. teach a series of burn-in ovens (see Figures 3a, 3b) comprising cooling being accomplished by water to air heat exchanger (column 6, lines 2-3) and this would inherently occur prior to the air entering the chamber (60) due to the chamber cooling fan (72) moving the air over the burn-in boards (48) which would inherently be pre-cooled due to the chamber fan (72) being a chamber cooling fan. Fredeman et al. further the advantage of the combination of a heat exchanger and a fan to move the cooled air removes large amounts of heat for each component by forced convection. In addition, Fredeman et al. teach an associated heater (22) and fan (22) and device temperature controller (98) to control the overall temperature individual components

(32). Fredeman et al. further teach the advantage of such a configuration of including a heater with a fan provides improved control over the temperature of individual components, allows wider variation in power dissipation among components and further provides means to make up for wider variation in oven temperature (column 6, lines 36-51), thereby improving the overall temperature control of the device. It would have further been obvious to one of ordinary skill in the art at the time of the invention was made to modify the fan cooling air source of Kondou et al. with the heat exchanger and fan cooling combination of Fredeman et al. in order to provide removal of large amounts of heat for each component by forced convection. It would have further been obvious to one of ordinary skill in the art at the time of the invention was made to modify the fan cooling assembly of Kondou et al. with the inclusion of a heater and control thereof in order to provide improved control over the temperature of individual components, to allow wider variation in power dissipation among components and to further provide means to make up for wider variation in oven temperature, thereby improving the overall temperature control of the device.

With respect to the limitations of claim 11, The Kondou-Fredeman combination discloses all of the limitations, as previously set forth, except for a heat exchanger between each of the adjacent oven chambers, the airflow from one oven chamber passing to one other oven chamber and through the heat exchanger between the one chamber and the other chamber. Fredeman et al. disclose that it is known in the art to provide a water to air heat exchanger to cool the air cycling through a burn-in oven chamber (column 6, lines 2-12). It would have been obvious to one having ordinary skill

in the art at the time the invention was made to provide a heat exchanger of Fredeman et al. between chambers with the cooling of air cycling through a burn-in oven system, in order to provide a single source of cooled air being recycled through the system, thereby increasing the operating efficiency of the burn-in oven.

Remarks

13. With respect to applicant's argument that Kondou et al. do not disclose a "burn-in oven", the examiner respectfully disagrees. Kondou et al. disclose a high performance computer (15) having a chamber/compartment (see Figure 1) having a plurality of substrates (1) with IC chips (2) thereon. It is known in the art that PC stations are used for burn-in/cyclical operational testing of devices under test. Kondou et al. further disclose the high performance computer (15) having all the recited limitations as noted above. Therefore since the chassis of high performance computer (15), as disclosed in Figure 1, has all the structure and functionality and is used for testing/burin-in of electrical devices, Kondou et al. fully meets a "burn-in oven" given its broadest reasonable interpretation.

14. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., burn-in oven with heaters) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

15. With respect to applicant's argument that Kondou et al. disclose controlling the cooling by sensing the temperature of the fan, the examiner respectfully disagrees. While Kondou et al. disclose "disposing a temperature sensor (100) such as a thermosensitive diode (thermistor) on the small fan" (column 6, lines 19-23), Kondou et al. further disclose "The number of revolutions of the motor for driving the small fan (3) may be controlled by a temperature sensor (100) buried into the LSI package (7) or into the bottom of the parallel flat sheet fins (11)". Clearly, the temperature sensor (100) is measuring the temperature of the LSI package (7) I both cases and mot the temperature of the small fan (3). Therefore, the argument is not persuasive and the examiner maintains that Kondou et al. disclose "a separate temperature sensor for each device under test to sense the temperature of the respective device under test" given its broadest reasonable interpretation

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Ralis whose telephone number is 571-272-6227. The examiner can normally be reached on Monday - Friday, 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Stephen J Ralis/
Examiner, Art Unit 3742

/TU B HOANG/
Supervisory Patent Examiner, Art Unit 3742

Stephen J Ralis
Examiner
Art Unit 3742

SJR
June 6, 2008